Remarks

The drawings have been amended to make editorial changes therein, bearing in mind the criticisms in the Official Action, to place the application in condition for allowance at the time of the next Official Action.

The indication that claims 30 and 37 include patentable subject matter is acknowledged with thanks.

Claim 24 was rejected as anticipated by TADATOMO et al. 6,225,650. Reconsideration and withdrawal of the rejection are respectfully requested.

Among other features, claim 24 includes dislocations in an epitaxial layer that extend substantially parallel to the thickness direction of epitaxial layer (e.g., the dislocations shown in Figure 3A that are perpendicular to the surface of the GaN layer 2) and that turn substantially perpendicular to this direction at a facet face of the layer (e.g., the dislocations in Figure 3A that turn parallel to the surface of the GaN layer 2 at the dashed lines representing the facet face) and terminate at the side walls of the mask that define the opening in the mask (e.g., note in Figure 3A that the turned dislocations hit side walls of the mask 5).

The Official Action indicates that this feature is shown in TADATOMO et al. in Figures 4 and 12(c) and is discussed at column 5, lines 21-33 and column 10, lines 52-60. These

citations have been very carefully considered but the feature is not seen therein. For example, none of the dislocations (shown by the thick lines L) terminate at side walls of the mask that define the openings in the mask. As shown in Figure 12(c), the dislocations that are turned by the facet faces turn for a second time upward over the mask and terminate at the top surface of the layer. Indeed, the facet faces (defined by the pyramids formed by dashed lines) extend upward from tops of the mask and thus any dislocation turned by a facet face cannot terminate at a side wall of the mask. Figure 12(c) of TADATOMO et al. is very similar to Figure 2 of the present application that shows the admitted prior art. As is apparent from Figure 2 of the present application, none of the dislocations terminate at side walls of the mask that define the openings in the mask. The facet faces (defined by the pyramids formed by dashed lines) extend upward from tops of the mask and the dislocations turned by a facet face extend parallel to the surface of the GaN layer above the mask. In both Figure 12(c) of TADATOMO et al. and Figure 2 of the present application, the mask is simply too thin for the dislocations to terminate at its side walls.

Accordingly, claim 24 avoids the rejection under §102.

Claims 25, 27, 31-32 and 34 were rejected as unpatentable over TADATOMO et al. Reconsideration and withdrawal of the rejection are respectfully requested.

The Official Action indicates that it is not inventive to discover an optimum value of a variable in a known process, and cites *In re Aller*, 105 U.S.P.Q. 233. However, *In re Antonie*, 195 U.S.P.Q. 6 (copy in the Appendix) states that there is an exception to this rule when the parameter being optimized is not recognized to be a result-effective variable.

The applied references do not recognize that a height of the mask is a result-effective variable. The references do not suggest that the height of the mask has any bearing on the end result. Further, the admitted prior art (page 21, lines 11-20 of the present application) states that the mask is necessarily thin because its only purpose has been to define the growth areas. This teaching is also part of the prior art and also must be considered when evaluating patentability. Since the prior art does not teach that mask height is result effective, and by contrast teaches that mask height is necessarily minimum, one of skill in the art would not have been motivated to attempt to optimize the height of the mask by setting the mask height to be greater than or equal to the opening width divided by two, times the tangent of the base angle of the facet structure. Accordingly, these claims would not be obvious to one of skill in the art from TADATOMO et al.

Claims 26 and 33 were rejected as unpatentable over TADATOMO et al. in view of TSUJIMURA et al. US2001/0008285.

Reconsideration and withdrawal of the rejection are respectfully requested for the reasons set forth above.

Claims 28-29 and 35-36 were rejected as unpatentable over TADATOMO et al. in view of KIMURA et al. 6,420,198. Reconsideration and withdrawal of the rejection are respectfully requested for the reasons set forth above.

In addition, KIMURA et al. and the present application were commonly owned at the time of the present invention (both were owned by NEC Corporation) and thus KIMURA et al. is removed as prior art by operation of §103(c). Thus, claims 28-29 and 35-36 are patentable regardless of the patentability of the claims from which they depend.

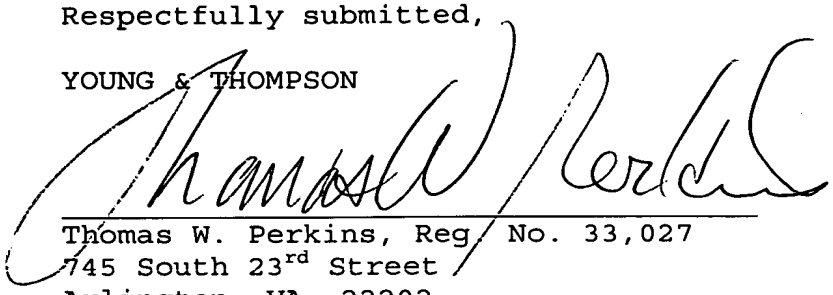
The indication that claim 18 was not considered is not understood. The previous Official Action indicated that claim 18 is generic, and therefore by definition readable on all species, including the elected species. Accordingly, generic claim 18 should be considered with claims 24-37. If claim 18 is no longer considered generic, then a statement so indicating is respectfully requested.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. §1.16 or under 37 C.F.R.§1.17.

Respectfully submitted,

YOUNG & THOMPSON



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Appendix

- two replacement drawing sheets for Figures 2 and 3A

- copy of *In re Antonie*